“Python Syllabus”

An Introduction To Python:-

- What is Python and history of Python?
- Features of Python.
- Installation and Working with Python.
- Understanding Python variables.
- Python basic Operators.
- Python Identifiers, Keywords and Indentation.
- Understanding python blocks..
- Getting User Input.
- Python Data Types.
  - What are variables?
- Python Core objects and Functions.

Program Flow Control :-

- Conditional blocks using if, else and else if.
- For loops in python.
- For loop using ranges, string, list and dictionaries.
- Use of while loops in python.
- Loop manipulation using pass, continue, break and else.
- Programming using Python conditional and loops block.

Logic Building :-

- Condition Based Problems.
- Looping Related Problems.
- Numeric Logical Problems.
- String Logical Problems.
- Sorting Problems
- Design Patterns.

List, Ranges, Dictionaries, Tuples and Sets in Python:-

- Introduction.
- Lists in Python
- Understanding Iterators
- Generators ,Comprehensions and Lambda Expressions
- Generators and Yield
- Next and Ranges
- Understanding and using Ranges
- Python Dictionaries
- Dictionary manipulation.
- Ordered Sets with tuples
- Sets
- Python Sets Examples

File Input and Output in Python:-

- Reading and writing text files.
- Reading config files in python.
- Writing log files in python.
- Understanding read functions, read (), readline (), readlines (), write () and writelines ().
- Writing Binary Files Manually.
- Using Pickle to Write Binary Files.
- Manipulating file pointer using seek.

Object Oriented Programming in Python:-

- OOPs Concepts.
- Concept of class, object and instances.
- Constructor, class attributes and destructors.
- Accessing attributes, Built-In Class Attributes.
- Inheritance
- Polymorphism (overlapping and overloading operators).
- Achieving Abstraction
- Encapsulation

Exception Handling in Python:-

- Exceptions Handling Introduction.
- Avoiding code break using exception handling.
- Handling various exceptions using try....except...else.
- Try-finally clause.
- Try-except-finally with return keyword.
- Argument of an Exception and create self-exception class.
- Exception Classes Hierarchy
- Raising an exceptions
- Custom(User-Defined) Exceptions.

Decorators :-

- Iterables
- Generators
- Yielding from the generators
- Inner Functions

  Decorator

Python Database Connectivity (PDBC):-

- SQL Database connection using python.
- Install the MySQL dB and other Packages
  - DML and DDL Operations with Databases.
- Performing Transactions.
- Handling Database Errors.
- Disconnecting Database.
- CRUD Operation Project using PDBC.

Multithreading in Python Programs:-

- What is multithreading?
- Single v/s Multithreaded Apps
- Starting a New Thread.
- Forking threads.
- The Threading Module.
- Class level & Object level Locks
  - Synchronizing Threads.

Django Framework:-

- Basic of Django Framework & its uses.
- Installation and setting up Django.
- Django with PyCharm CE.
- Virtual Environments.
- Templates in Django & Template Inheritance
- Context in Django
- Static Files in Django.
- Syntax and URL.
- Routing in Django.
- Request/Response Architecture in Django.
- Models
- Relationships in Models
- Handling various Databases in Django
- Django-ORM
- Queries of Django-ORM
- Function-based Views.
- Class-based Views.
- Forms – HTML,Model & Django Forms.
- Crispy Forms
- CRUD Operations using Model Forms
- Form Validation
- Custom user models.
- Cookies & Session in Django.
- User Authentication(Login , Logout, SignUp)

API(Application Programming Interfaces):-

- Introduction
- Serialization & Deserialization
- Python JSON Module
- API
- Web API / Web Services
- REST & RESTful API
- Basics of SOAP API, REST API

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